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SEACOR
Science & Engineering Analysis Corporation

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SUPPLEMENTAL SITE INVESTIGATION, BUILDING GROUP 7-027-1/2/3, NORTH BOEING FIELD, SEATTLE, WASHINGTON
(SEACOR Job No. 00100-047-01)

Mr. Anderson:

INTRODUCTION

This letter report presents the results of a supplemental soil and groundwater investigation, conducted by SEACOR for The Boeing Company (Boeing), at Building Group 7-027-1/2/3 (investigation area) at North Boeing Field in Seattle, Washington (Figures 1 and 2). This investigation was conducted to supplement the previous Pre-construction Environmental Investigation performed by SEACOR at the site. Results of the Pre-construction Environmental Investigation are documented in a report entitled "Pre-construction Environmental Investigation, Proposed 7-027-1/2/3 and 3-360/361/365 Building Sites, North Boeing Field, King County Washington" dated February 14, 1992 (SEACOR Job No. 00100-005-01).

The objectives of this investigation were to assess subsurface soil and groundwater conditions at the site relative to select chemicals and to supplement previously collected data. During this investigation, SEACOR gauged and sampled four existing groundwater monitoring wells and drilled and sampled five soil borings in accordance with our work plan entitled "Work Plan, Supplemental Site Investigation, Building Group 7-027-1/2/3", dated February 9, 1993.

A SEACOR geologist was on-site to gauge, purge and obtain groundwater samples from existing Monitoring Wells MW-1 through MW-4 on February 3, 1993. A duplicate sample (MW-2D) was collected from Well MW-2.

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TABLE 1
WELL GAUGING DATA[1]
SUPPLEMENTAL SITE INVESTIGATION
BUILDING GROUP 7-027-1/2/3
NORTH BOEING FIELD
SEATTLE, WASHINGTON

Well No.	Wellhead Elevation (ft)[2]	Depth to Groundwater (ft)[3]	Calculated Groundwater Surface Elevation (ft)[2]	Remarks
MW-1	99.16	10.32	88.84	No Sheen or Odor
MW-2	99.62	10.91	88.71	No Sheen, Slight Odor
MW-3	99.04	10.05	88.99	No Sheen or Odor
MW-4	98.14	8.86	89.28	No Sheen or Odor

NOTES:

1 All measurements made on February 3, 1993.
2 Elevation relative to SEACOR benchmark located off the concrete sidewalk at the southeastern corner of Building 7-027-1, with an assigned reference elevation of 100.00 feet above Mean Sea Level.
3 Depth to groundwater relative to the survey mark on top of the PVC well casing.

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TABLE 2
GROUNDWATER SAMPLE ANALYTICAL RESULTS
SUPPLEMENTAL SITE INVESTIGATION
BUILDING GROUP 7-027-1/2/3
NORTH BOEING FIELD
SEATTLE, WASHINGTON

	Sample Designation					
Compound[1]	MW-1	MW-2	MW-2D (Duplicate of MW-2)	MW-3	MW-4	MTCA Cleanup Level[2]
TPH (mg/l)[3]						
As gasoline	ND <0.25[4]	**1.5**[5]	**1.6**	ND <0.25	ND <0.25	1.0
As diesel	ND <0.25	ND <0.25	ND <0.25	ND <0.25	ND <0.25	1.0
BTEX (µg/l)[3]						
Benzene	ND <1.0	1.4	1.5	NA[6]	NA	5.0
Toluene	ND <1.0	ND <1.0	ND <1.0	NA	NA	40.0
Ethyl Benzene	ND <1.0	**34**	**38**	NA	NA	30.0
Xylenes	ND <2.0	**91**	**96**	NA	NA	20.0
VOCs (µg/l)						
Vinyl Chloride	NA	NA	NA	**1.2**	**0.7**	0.2
Acetone	NA	NA	NA	ND <5.0	5.2 B[7]	800*
Cis-1,2,Dichloroethene	NA	NA	NA	1.8	ND <1.0	80*
Trichloroethene	NA	NA	NA	**22**	ND <1.0	5.0

NOTES:

1 TPH = Total Petroleum Hydrocarbons; as gasoline (hydrocarbon range C_6 to C_{12}) by Washington State Department of Ecology (Ecology) Method WTPH-G; as diesel (hydrocarbon range C_{12} to C_{24}) by Ecology Method WTPH-D. BTEX by EPA Method 8020. VOCs = Volatile Organic Compounds by EPA Method 8240. Only those VOCs detected are shown.

2 MTCA Cleanup Level = Method A groundwater cleanup level from WAC 173-340-720(2)(a)(i), except those marked with * which are Method B cleanup levels from a Department of Ecology memorandum, dated March 23, 1992, entitled "Development of MTCA Cleanup Level."

3 mg/l = milligrams per liter, µg/l = micrograms per liter.

4 ND <0.25 indicates constituent not detected above the method detection level shown.

5 Results shown in **Bold** exceed MTCA cleanup level.

6 NA = Not Analyzed.

7 B = Analyte was detected in the associated blank as well as the sample indicating possible/probable laboratory contamination.

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TABLE 3
SOIL SAMPLE ANALYTICAL RESULTS
SUPPLEMENTAL SITE INVESTIGATION
BUILDING GROUP 7-027-1/2/3
NORTH BOEING FIELD
SEATTLE, WASHINGTON
(all results in milligrams per kilogram)

	Boring Number and Sample Interval (feet)										
Compound[1]	SB-9A (3-3.5)	SB-9A (5.5-6)	SB-10A (3-3.5)	SB-10A (8-8.5)	SB-11A (3-3.5)	SB-11A (7-7.5)	SB-12A (5.5-6)	SB-12A (9.5-10)	SB-13A (5-5.5)	SB-13A (10.5-11)	MTCA Cleanup Level[2]
TPH											
As gasoline	ND <20[3]	ND <20	ND <20	ND <20	ND <20	ND <20	ND <20	ND <20	ND <20	ND <20	100
As diesel	ND <25	ND <25	ND <25	ND <25	ND <25	ND <25	ND <25	ND <25	ND <25	ND <25	200
As oil	ND <50	ND <50	ND <50	ND <50	ND <50	ND <50	ND <50	ND <50	ND <50	ND <50	200
BTEX											
Benzene	ND <0.056	ND <0.056	ND <0.054	ND <0.065	NA[4]	NA	ND <0.054	ND <0.077	ND <0.054	ND <0.063	0.5
Toluene	ND <0.056	ND <0.056	ND <0.054	ND <0.065	NA	NA	ND <0.054	ND <0.077	ND <0.054	ND <0.063	40.0
Ethyl Benzene	ND <0.056	ND <0.056	ND <0.054	ND <0.065	NA	NA	ND <0.054	ND <0.077	ND <0.054	ND <0.063	20.0
Xylenes	ND <0.11	ND <0.11	ND <0.11	ND <0.13	NA	NA	ND <0.108	ND <0.154	ND <0.108	ND <0.127	20.0
VOCs											
Acetone	NA	NA	NA	NA	0.0057	0.023	NA	NA	NA	NA	8,000*
Methylene Chloride	NA	NA	NA	NA	ND <0.0021	0.0049	NA	NA	NA	NA	0.5
2-Butanone	NA	NA	NA	NA	ND <0.0052	0.0068	NA	NA	NA	NA	4,000*
Toluene	NA	NA	NA	NA	ND <0.0011	0.0015 M[5]	NA	NA	NA	NA	40

NOTES:

1 TPH = total petroleum hydrocarbons as gasoline (hydrocarbon range C_6 to C_{12}), as diesel (hydrocarbon range C_{12} to C_{24}), and as oil (hydrocarbon range C_{24} to C_{38}) by Washington State Department of Ecology Method WTPH-HCID; BTEX by EPA Method 8020; VOCs = volatile organic compounds by EPA Method 8240. Only those VOCs detected are shown.
2 MTCA Cleanup Level = Method A soil cleanup level from WAC 173-340-740(2)(a)(i), except those marked with * which are Method B cleanup levels from a Department of Ecology memorandum, dated March 23, 1992, entitled "Development of MTCA Cleanup Level."
3 ND <20 indicates constituents not detected above the method detection limit shown.
4 NA = Not analyzed.
5 M = Estimated value of analyte found and confirmed by laboratory but with low spectral match parameters.

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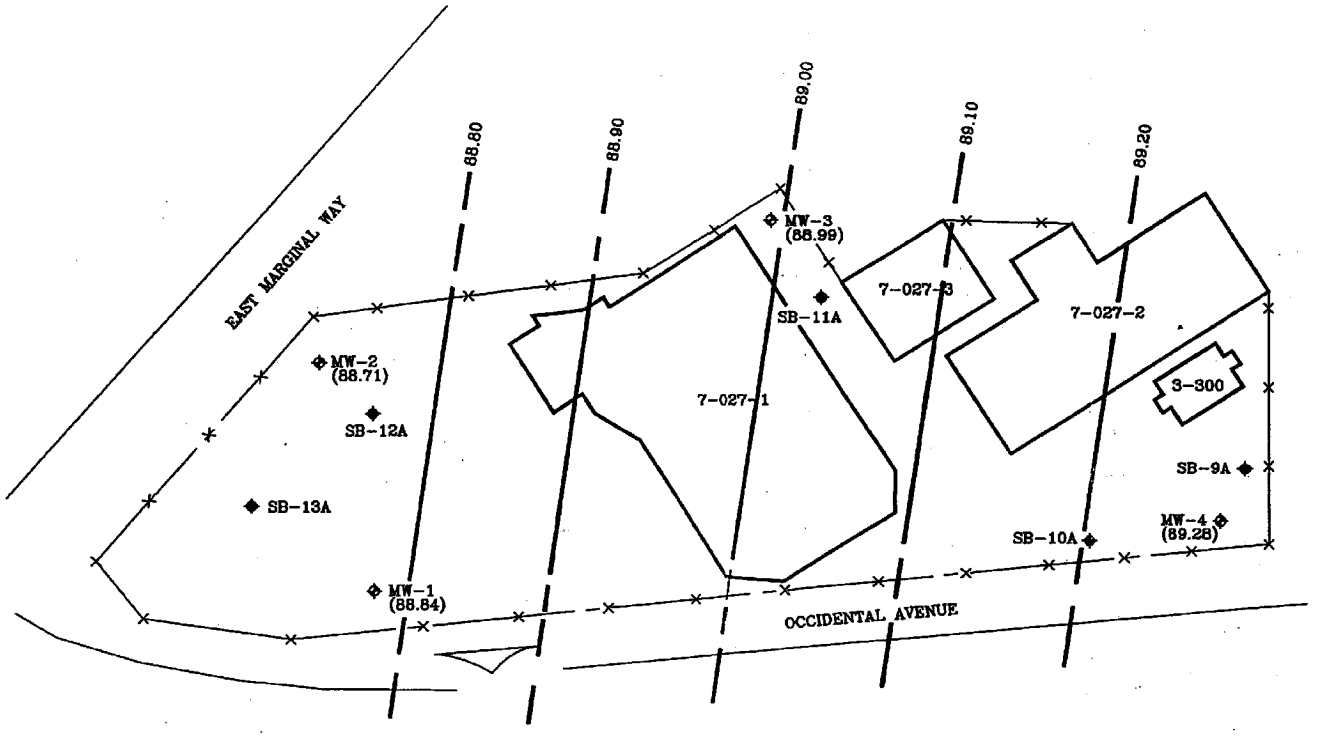

LEGEND

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SB-9A ◆	SOIL BORING LOCATION
MW-1 ⊕	EXISTING MONITORING WELL LOCATION
(86.89)	GROUNDWATER ELEVATION ON 2/3/93
- - - -	GROUNDWATER SURFACE ELEVATION CONTOUR ON 2/3/93 DASHED WHERE INFERRED

Note: Elevations relative to a benchmark from a previous investigation with a designated elevation of 100.00 feet.

SEACOR	DWN CC APPR DATE 3/16/93 JOB # 00100-047-01	FIGURE 3 SITE PLAN BUILDING GROUP 7-027-1/2/3 NORTH BOEING FIELD SEATTLE, WASHINGTON

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